FORM-PTO-1390 (Rev. 10-96) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER: 032326-083

U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5): Unassigned 09/623796

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/FR99/00445	26 February 1999	09 March 1998

TITLE OF INVENTION: METHOD FOR MAKING CONTACTLESS CARDS

APPLICANT(S) FOR DO/EO/US: Philippe Patrice

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [X] This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and the PCT Articles 22 and 39(1).
4. [X] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [ ] is transmitted herewith (required only if not transmitted by the International Bureau).
   b. [X] has been transmitted by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US)
6. [X] A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. [X] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau).
   b. [ ] have been transmitted by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [X] have not been made and will not be made.
8. [ ] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [X] A FIRST preliminary amendment.
    [ ] A SECOND or SUBSEQUENT preliminary amendment.
14. [ ] A substitute specification.
15. [ ] A change of power of attorney and/or address letter.
16. [ ] Other items or information:

U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
Unassigned 09/623796	PCT/FR99/00445	032326-083

17. ☒ The following fees are submitted:	CALCULATIONS	PTO USE ONLY
Basic National Fee (37 CFR 1.492(a)(1)-(5)):		
Search Report has been prepared by the EPO or JPO $840.00 (970)		
International preliminary examination fee paid to USPTO (37 CFR 1.482) . . . . . $670.00 (956) No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) $690.00 (958)		
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO $970.00 (960)		
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) $96.00 (962)		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 840.00	
Surcharge of **$130.00 (154)** for furnishing the oath or declaration later than 20 ☐ 30 ☐ months from the earliest claimed priority date (37 CFR 1.492(e)).	$ -0-	

Claims	Number Filed	Number Extra	Rate		
Total Claims	8-20 =	-0-	X$18.00 (966)	$ -0-	
Independent Claims	1-3 =	-0-	X$78.00 (964)	$ -0-	
Multiple dependent claim(s) (if applicable)			+$260.00 (968)	$ -0-	
TOTAL OF ABOVE CALCULATIONS =				$ 840.00	
Reduction for 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				$ -0-	
SUBTOTAL =				$ 840.00	
Processing fee of **$130.00 (156)** for furnishing the English translation later than 20 ☐ 30 ☐ months from the earliest claimed priority date (37 CFR 1.492(f)). +				$ -0-	
TOTAL NATIONAL FEE =				$ 840.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00 (581)** per property +				$ -0-	
TOTAL FEES ENCLOSED =				$ 840.00	
				Amount to be: refunded	$
				charged	$

a. ☒ A check in the amount of $ 840.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. 02-4800 in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-4800. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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James A. LaBarre
NAME

28,632
REGISTRATION NUMBER

Patent
Attorney's Docket No. 032326-083

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	
	)	
Philippe PATRICE	)	Group Art Unit: Unassigned
	)	
Application No.: Unassigned	)	Examiner: Unassigned
	)	
Filed: September 8, 2000	)	
	)	
For: METHOD FOR MAKING CONTACTLESS CARDS	)	

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination and the calculation of filing fees, kindly amend the above-identified application as follows:

IN THE SPECIFICATION:

Page 1, immediately following the title, insert the following:

--This disclosure is based upon, and claims priority from French Patent Application No. 98/02844, filed March 9, 1998, and International Application No. PCT/FR99/00445, filed February 26, 1999, the contents of which are incorporated herein by reference.

Background of the Invention--.

Page 3, before line 15, insert the following heading:

--**Summary of the Invention** --.

Page 5, before line 26, insert the heading:

--**Brief Description of the Drawing**--;

Page 6, before line 6, insert the heading:

--**Detailed Description**--.

IN THE CLAIMS:

1. (Amended) A method of manufacturing a contactless smart card including an integrated-circuit chip [(3)] and an antenna [(2)], in which metallised protrusions [(5)] are produced on two contact pads [(4)] on the chip [(3), characterised in that the connection of], said method including the step of connecting the chip [(3)] to the antenna [(2) is effected] by embedding the metallised protrusions [(5)] in the thickness of the antenna [(2)], at the time that the chip [(3)] is attached to the [said] antenna [(2)].

2. (Amended) A method according to Claim 1, [characterised in that] wherein the antenna [(2)] is produced from a material [able to have] that has a viscous state at the time that the chip [(3)] is attached, to allow the embedding of the metallised protrusions [(5)].

3. (Amended) A method according to [one of Claims 1 to 2, characterised in that] claim 1, wherein the antenna [(2)] is produced on an insulating substrate [(1) to the format of the] having the form factor of a smart card.

4. (Amended) A method according to [one of Claims 1 to 3, characterised in that] claim 1, wherein the antenna [(2)] is produced from a thermoplastic material loaded with metallic particles and [in that] the chip [(3)] is attached to the antenna by thermocompression.

5. (Amended) A method according to [one of Claims 1 to 3, characterised in that] claim 1, wherein the antenna [(2)] is produced from a non-polymerised conductive material and [then] the chip [(3)] is attached to the antenna [(2)] by compression, and [in that an addition of heat polymerises] further including the step of applying heat to polymerize the antenna material.

6. (Amended) A method according to [one of Claims 1 to 3, characterised in that] claim 1, wherein the antenna is produced from a moist conductive polymer material, and [in that] the chip [(3)] is attached to the antenna [(2)] by compression.

7. (Amended) A method according to [one of Claims 1 to 3, characterised in that] claim 1, wherein the antenna [(2)] is produced from a thermoplastic material loaded with metallic particles and the chip [(3)] is [previously] glued to an insulating sheet [(7) to the format of the] having the form factor of a smart card, and [in that] wherein the connection of the chip [(3)] to the antenna [(2)] is effected by hot lamination.

8. (Amended) A method according to [one of Claims 1 to 7, characterised in that] claim 1, wherein the metallised protrusions [(5)] have a substantially conical shape.

REMARKS

Entry of the foregoing amendments is respectfully requested. These amendments are intended to further clarify the language of the claims and specification, as well as eliminate multiple dependencies.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____

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Date: September 8, 2000

WO 99/46728 PCT/FR99/00445

METHOD FOR MAKING CONTACTLESS CARDS

The present invention relates to the manufacture of smart cards, and more particularly cards capable of functioning without contact by means of an antenna integrated into the card.

Such cards are intended for performing various operations such as, for example, banking operations, telephone communications, identification operations, operations of debiting or recharging units of account, and all kinds of operations which can be performed remotely by high-frequency electromagnetic coupling between a transmission/reception terminal and a card placed in the area of action of this terminal.

One of the main problems which it is necessary to resolve in the manufacture of such cards is the connection of the antenna to the integrated-circuit

chip which provides the electronic functioning of the card. Another problem which it is necessary to resolve is the reduction of the thickness of the card as far as possible. The conventional constraints of mechanical strength, reliability and manufacturing cost must obviously be taken into account in this manufacture.

A known solution from the prior art, described in the document PCT WO 96/07985, for effecting the connection between the antenna and the integrated-circuit chip, consists of forming metallic protrusions on two contact pads on the chip, and then connecting these protrusions to the ends of an antenna wire. In this case, the antenna wire is a copper wire formed on a substrate and the protrusions are applied to this antenna wire by hot compression.

However, the interconnection unit thus obtained has problems of mechanical strength and tensile fragility of the connection. This is because, when the chip is subjected to mechanical stresses, the protrusions suffer damage affecting the quality of the electrical connection. The mechanical stresses can even go as far as causing the rupture of the protrusions and consequently the pulling away of the chip. The contactless smart cards produced according to this prior method therefore have a relatively short service life.

In another known solution from the prior art, the connection between the antenna and the chip is effected by means of conductive glue applied between the antenna and metallic protrusions formed on two contact pads on

the chip. In this case, however, a significant excess thickness appears because of the presence of the glue and the protrusions. In addition, the manufacture of the card requires an additional step of dispensing the dots of glue.

The protrusions, and where applicable the dots of conductive glue, have a not insignificant thickness which is added to that of the antenna and that of the chip, which increases the bulk of the interconnection unit obtained. However, it is sought to obtain an interconnection unit of very small size in order to produce an ultraflat contactless smart card, that is to say with a thickness less than the standard ISO thickness.

The present invention makes it possible to resolve the problems encountered in the prior art since it proposes to manufacture a contactless smart card in which the chip is directly connected to the antenna by means of metallised protrusions which are embedded in the thickness of the antenna, at the time of attaching the chip to the antenna.

The object of the invention is more particularly a method of manufacturing a contactless chip card including an integrated-circuit chip and an antenna, in which metallised protrusions are produced on two contact pads on the chip, characterised in that the connection of the chip to the antenna is effected by embedding the metallised protrusions in the thickness of the antenna, at the time that the chip is attached to the said antenna.

By virtue of the method according to the invention, the connection obtained between the antenna and the chip is of very good quality. This is because, given that the metallised protrusions are embedded in the antenna, there is no risk of their being damaged, and even less being broken, when the card is subjected to mechanical stresses. The mechanical strength of the connection being improved, the contactless smart cards manufactured according to this method consequently have an increased service life.

In addition, given that the protrusions are embedded in the thickness of the antenna, the interconnection assembly formed by the chip and antenna has reduced bulk, which is very advantageous for producing an ultraflat card, with a thickness less than 760 m.

In addition, according to another characteristic of the invention, the antenna is produced from a material able to have a viscous state at the time the chip is attached, to allow the embedding of the metallised protrusions.

Thus the antenna can be produced from a thermoplastic material loaded with metallic particles and the chip is attached to the antenna by thermocompression. In this case, the heat softens the antenna material and the compression facilitates the penetration of the protrusions into the thickness of the softened material.

According to another embodiment, the antenna can be produced from a non-polymerised conductive material,

and then the chip is attached to the antenna by compression, and an addition of heat polymerises the antenna material. In this case, before the attachment of the chip, the antenna being produced from a non-polymerised material, it has a soft appearance. The compression step then facilitates the penetration of the protrusions into the antenna material and the heating, for its part, polymerises the antenna material in order to harden it.

According to another embodiment, the antenna is produced from a moist conductive polymer material and the chip is attached to the antenna by compression. In this case, the polymer still being moist, it has a viscous appearance. Once the embedding of the protrusions has been effected by compression, drying in ambient air suffices to harden the polymer.

According to yet another embodiment, the antenna is produced from a thermoplastic material loaded with metallic particles, the chip is glued in advance to an insulating sheet to the format of the smart card to be produced, and then the connection of the chip to the antenna is effected by hot lamination. In this case also, the heat softens the antenna material whilst the lamination facilitates the penetration of the protrusions into the softened material.

Other particularities and advantages of the invention will emerge from a reading of the description given by way of illustrative and non-limitative example and made with reference to the accompanying figures, which depict:

- Figures 1a and 1b, diagrams in section of the mounting of a chip during its connection to an antenna,

- Figures 2a and 2b, diagrams in section of the mounting of a chip during its connection to an antenna, according to another embodiment.

Figures 1a and 1b depict a chip 3 during its mounting on an antenna 2. The interconnection assembly formed by the chip 3 and antenna 2 is intended to be inserted in a contactless smart card of ultrafine thickness less than the standard ISO thickness.

A preliminary step of the manufacturing method according to the invention consists of forming metallised protrusions 5 on contact pads 4 on the chip 3. The protrusions 5 are intended to provide the electrical connection between the chip 3 and antenna 2. They are consequently necessarily produced from a conductive material. They may for example be produced from gold, or from a polymer material loaded with metallic particles.

Preferably the protrusions 5 are produced on two contact pads 4 on the chip in order to be able to produce a connection on conductive areas of the antenna 2 situated at its ends.

Given that the protrusions 5 are intended to be embedded in the thickness of the antenna 2, they preferably have a thickness approximately equal to, or slightly less than, that of the antenna.

In addition, to allow good penetration of the protrusions 5 into the thickness of the antenna 2, a substantially conical shape is preferred for them.

The antenna 2, for its part, is produced on an insulating substrate 1. It is produced from a conductive material able to be softened at the time of attaching the chip 3, to allow better penetration of the protrusions 5. Its shape is of little importance, and may for example represent a spiral or any other pattern.

The insulating substrate 1 is for example a plastic sheet to the format of the smart card to be produced. It may for example be composed of polyvinyl chloride (PVC) or polyethylene (PE).

A first embodiment consists of producing the antenna 2 from a thermoplastic material loaded with metallic particles. This material is for example supplied by the company AIT under the reference LZTP 8550-FT. The antenna is formed in this case by screen-printing with conductive ink with a thermoplastic base. The metallic particles consist for example of small balls of silver. In this case, the subsequent step consisting of attaching the chip 3 to the antenna 2 is effected by hot compression 6. Heating in fact softens the thermoplastic material constituting the antenna 2, and the simultaneous compression facilitates the penetration of the protrusions 5 into the thickness of the antenna with a view to effecting the connection of the chip 3 to the antenna 2. When the thermocompression operation is terminated, the interconnection assembly obtained is left to cool at room temperature. Cooling enables the antenna material to regain its solid state and its initial shape. The

thermoplastic antenna generally has adhesive properties during its softening which make it possible to fix the chip.

Another plastic sheet to the format of the smart card to be produced, not shown in Figures 1a and 1b, can then be applied to the top of the interconnection assembly obtained and fixed by gluing, in order to enclose the chip and antenna and thus form a contactless card.

By virtue of this manufacturing method, the connection of the chip 3 to the antenna 2, by embedding the protrusions 5 in the antenna 2, and the fixing of the chip 3 to the antenna 2, are effected in one and the same step.

In a variant embodiment, the antenna 2 is produced from a conductive thermosetting polymer material, that is to say one loaded with metallic particles. In this case, it is ensured that the antenna material is not polymerised before the step of attaching the chip to the antenna, so that this material is in a viscous state, for example between 8000 CPS and 6000 CPS. The chip 3 is then attached by compression 6, in order to facilitate the penetration of the protrusions 5 into the thickness of the antenna material. An addition of heat also polymerises the antenna material 2 so that it hardens. This heating operation can be carried out either after or simultaneously with the compression operation. In this case too, the electrical connection between the chip

and the antenna and the fixing of the chip to the antenna are effected in a single step.

In another variant embodiment, the antenna 2 is produced from a conductive polymer material which has not been dried. In this case, the fact that the polymer is moist suffices for it to keep its soft appearance. The chip 3 can then be attached to the antenna 2 by compression 6 in order to facilitate the penetration of the metallised protrusions 5 into the thickness of the antenna material. It then suffices to leave the interconnection block obtained to dry in ambient air, so that the antenna material hardens. In this case, an addition of heat is then not necessary.

Figures 2a and 2b depict another embodiment of a mounting of a chip 3 connected to an antenna 2. In these figures the same references as in Figures 1a and 1b have been repeated in order to designate the same elements. In this embodiment, the antenna 2 is also produced on an insulating substrate 1, such as a plastic sheet for example, to the format of the smart card to be produced. The antenna 2 is produced from a thermoplastic material loaded with metallic particles. Metallised protrusions 5 are also formed on the contact pads 4 on the chip 3.

However, this embodiment differs from the previous ones by the fact that the step of attaching the chip 3 to the antenna 2 is not carried out in the same way.

This is because, in the example in Figures 2a and 2b, an additional preliminary step consists of gluing

the chip 3 to an insulating substrate 7. This substrate 7 is for example a plastic sheet made of polyvinyl chloride (PVC) or polyethylene (PET) to the format of the card which it is wished to produce. In this case, the non-active rear face of the chip 3, that is to say the face opposite to the one which carries the contact pads 3 and metallised protrusions 5, is therefore glued to the substrate 7.

Thus the chip 3 and antenna 2 are disposed between two plastic sheets 1 and 7, preferably produced to the format of the card which it is wished to manufacture.

The attaching of the chip 3 to the antenna 2 and the electrical interconnection are then effected during an operation of hot lamination 8 of the two plastic sheets 1 and 7. The heat in fact softens the thermoplastic material constituting the antenna whilst the lamination, consisting of pressing the two plastic sheets 1 and 7 against each other, facilitates the penetration of the protrusions 5 into the softened antenna material.

When the hot lamination operation is terminated, the interconnection assembly obtained is left to cool so that the antenna material 2 regains its initial solid state. The chip 3 and antenna 2 are then connected and enclosed between two plastic sheets 1 and 7, thus forming a contactless smart card.

By virtue of the manufacturing method according to the invention, it is possible to manufacture contactless smart cards with ultrafine thickness less

than 760 m. The thickness of the card obtained is in fact equal to the sum of the thicknesses of the two plastic sheets 1 and 7, chip 3 and antenna 2. Orders of magnitude of these thicknesses are given below for purely illustrative purposes. The antenna 2 can be produced on a thickness of between 20 and 30 m, the integrated-circuit chip 3 can be produced on a thickness of less than 300 m and the plastic sheets 1 and 7 can be produced on a thickness of between 40 and 100 m.

In addition, the protrusions 5 being completely embedded in the thickness of the antenna 2, there is no risk of their being damaged by mechanical stresses. The interconnection assembly obtained therefore has very good mechanical strength and increased service life.

CLAIMS

1. A method of manufacturing a contactless smart card including an integrated-circuit chip (3) and an antenna (2), in which metallised protrusions (5) are produced on two contact pads (4) on the chip (3), characterised in that the connection of the chip (3) to the antenna (2) is effected by embedding the metallised protrusions (5) in the thickness of the antenna (2), at the time that the chip (3) is attached to the said antenna (2).

2. A method according to Claim 1, characterised in that the antenna (2) is produced from a material able to have a viscous state at the time that the chip (3) is attached, to allow the embedding of the metallised protrusions (5).

3. A method according to one of Claims 1 to 2, characterised in that the antenna (2) is produced on an insulating substrate (1) to the format of the smart card.

4. A method according to one of Claims 1 to 3, characterised in that the antenna (2) is produced from a thermoplastic material loaded with metallic particles and in that the chip (3) is attached to the antenna by thermocompression.

5. A method according to one of Claims 1 to 3, characterised in that the antenna (2) is produced from a non-polymerised conductive material and then the chip (3) is attached to the antenna (2) by compression, and

in that an addition of heat polymerises the antenna material.

6. A method according to one of Claims 1 to 3, characterised in that the antenna is produced from a moist conductive polymer material, and in that the chip (3) is attached to the antenna (2) by compression.

7. A method according to one of Claims 1 to 3, characterised in that the antenna (2) is produced from a thermoplastic material loaded with metallic particles and the chip (3) is previously glued to an insulating sheet (7) to the format of the smart card, and in that the connection of the chip (3) to the antenna (2) is effected by hot lamination.

8. A method according to one of Claims 1 to 7, characterised in that the metallised protrusions (5) have a substantially conical shape.

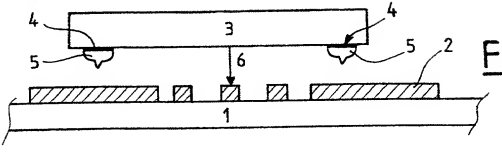

FIG_1a

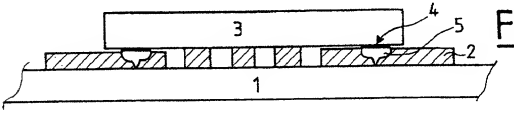

FIG_1b

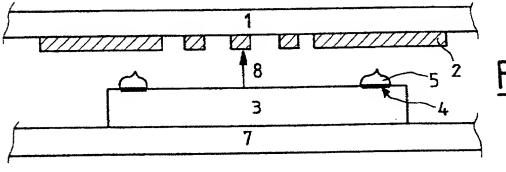

FIG_2a

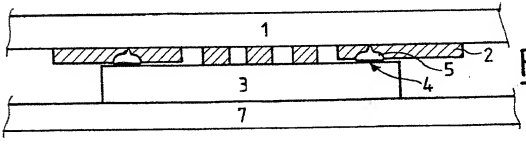

FIG_2b

COMBINED DECLARATION AND POWER OF ATTORNEY FOR UTILITY PATENT APPLICATION	Attorney's Docket No. GEN 520

As a below-named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name;
I BELIEVE I AM THE ORIGINAL, FIRST AND SOLE INVENTOR (if only one name is listed below) OR AN ORIGINAL, FIRST AND JOINT INVENTOR (if more than one name is listed below) OF THE SUBJECT MATTER WHICH IS CLAIMED AND FOR WHICH A PATENT IS SOUGHT ON THE INVENTION ENTITLED:

METHOD FOR MAKING CONTACTLESS CARDS

the specification of which

(check one) Γ is attached hereto;

Γ was filed on _____ as

Application No. _____

And was amended on _____ ;
(if applicable)

I HAVE REVIEWED AND UNDERSTAND THE CONTENTS OF THE ABOVE-IDENTIFIED SPECIFICATION, INCLUDING THE CLAIMS, AS AMENDED BY ANY AMENDMENT REFERRED TO ABOVE;

I ACKNOWLEDGE THE DUTY TO DISCLOSE TO THE OFFICE ALL INFORMATION KNOWN TO ME TO BE MATERIAL TO PATENTABILITY AS DEFINED IN TITLE 37, CODE OF FEDERAL REGULATIONS, Sec. 1.56 (as amended effective March 16, 1992);

I do not know and do not believe the said invention was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to said application; that said invention was not in public use or on sale in the United States of America more than one year prior to said application; that said invention has not been patented or made the subject of an inventor's certificate issued before the date of said application in any country foreign to the United States of America on any application filed by me or my legal representatives or assigns more than twelve months prior to said application;

I hereby claim foreign priority benefits under Title 35, United States Code Sec. 119 and/or Sec. 365 of any foreign application(s) for patent or inventor's certificate as indicated below and have also identified below any foreign application for patent or inventor's certificate on this invention having a filing date before that of the application(s) on which priority is claimed:

COUNTRY/INTERNATIONAL	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED
PCT	WO 99/46728	26 February 1999	YES
FRANCE	FR98/02844	9 MARCH 1998	YES

COMBINED DECLARATION AND POWER OF ATTORNEY	Attorney's Docket No. GEN 528

I hereby appoint the following attorneys and agent(s) to prosecute said application and to transact all business in the Patent and Trademark Office connected therewith and to file, prosecute and to transact all business in connection with international applications directed to said invention:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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